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		Filing Date	1/17/2004
		First Named Inventor	Venkateswaran
		Art Unit	1645
		Examiner Name	Lakia J. Tongue
Sheet 1	of 3	Attorney Docket Number	CIT002

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	1	Anonymous, (1980) NASA Standard Procedures for the Microbiological Examination of Space Hardware, NHB 5340.1B, 1980, Jet Propulsion Laboratory communication, National Aeronautics and Space Administration.	
	2	Cole R. M. and Popkin, T. J. (1981) Electron microscopy. In Manual of Methods for General Bacteriology, pp. 34-51. Edited by P. Gerhardt, R. G. E. Murray, R. N. Costilaw, E. W. Nester, W. A. Wood, N. R. Krieg & G. B. Phillips. Washington, D.C.: American Society for Microbiology.	
	3	Colwell, R. R. and Grimes, D. J. (2000) Nonculturable Microorganisms in the Environment. Washington, D.C.: American Society for Microbiology.	
	4	Johnson, J. L. (1981) Genetic characterization. In Gerhardt, P. Manual of Methods for General Bacteriology, pp. 450-472. Edited by P. Gerhardt, R. G. E. Murray, R. N. Costilaw, E. W. Nester, W. A. Wood, N. R. Krieg & G. B. Phillips. Washington, D.C.: American Society for Microbiology.	
	5	La Duc M.T., Nicholson W., Kern R., and K. Venkateswaran (2003) Microbial Characterization of the Mars Odyssey Spacecraft and Its Encapsulation Facility. Environ Microbiol (in press).	
	6	Nakamura, L. K. (2000) Phylogeny of Bacillus sphaericus-like organisms. Int J Syst Bacteriol 50: 1715-1722.	
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	9	Nicholson, W. L., Munakata, N., Homeck, G., Melosh, H. J. and Setlow, P. (2000) Resistance of Bacillus endospores to extreme terrestrial and extraterrestrial environments. Microbiol Mol Biol Rev 64: 548-572.	
	10	Priest, F. G. (1993) Systematics and Ecology of Bacillus. In Bacillus subtilis and Other Gram-positive Bacteria, pp. 3-33. Edited by A. L. Sonenshein, J. A. Hoch, & R. Losick. Washington D.C.: American Society for Microbiology.	

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	22	Wayne, L., Brenner, D. J., Colwell, R. R., Grimont, P. A. D., Kandler, O., Krichevsky, M. I., Moore, L. H., Moore, W. E. C., Murray, R. G. E., Stackebrandt, E., Starr, M. P., & Truper, H. G. (1987) International Committee on Systematic Bacteriology: Report of the ad hoc committee on reconciliation of approaches to bacterial systematics. Int J Syst Bacteriol 37: 463-464.	
	23	Yoon, J.-H., Lee, K.-C., Weiss, N., Kho, Y. H., Kang, K. H. & Park, Y.-H. (2001) Sporosarcina aquimarina sp. nov., a bacterium isolated from seawater in Korea, and transfer of Bacillus globisporus (Larkin and Stokes 1967), Bacillus psychrophilus (Nakamura 1984) and Bacillus pasteurii (Chester 1898) to the genus Sporosarcina as Sporosarcina globispora comb. nov., Sporosarcina psychrophila comb. nov. and Sporosarcina pasteurii comb. nov., and emended description of the genus Sporosarcina. Int J Syst Evol Microbiol 51: 1079-1086.	
	24	GenBank; http://www.ncbi.nlm.nih.gov/	
	25	http://mars.jpl.nasa.gov/odyssey/	

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	2	Ezaki, T., Hashimoto, Y. and Yabuuchi, E. (1989) Fluorometric deoxyribonucleic acid-deoxyribonucleic acid hybridization in microdilution wells as an alternative to membrane filter hybridization in which radioisotopes are used to determine genetic relatedness among bacterial strains. Int J Syst Bacteriol 39: 224-229.	
	3	Neide, E. (1904) Botanische Beschreibung einiger sporenbildenden Bakterien, Zentbl Bakteriol Parasitenkd Infektionskr Hyg Abt II 12: 337-352.	

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***Bacillus nealsonii* sp. nov., isolated from a spacecraft-assembly facility, whose spores are γ -radiation resistant**

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Masataka Satomi², Wayne Nicholson³ and Roger Kern¹

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One of the spore-formers isolated from a spacecraft-assembly facility, belonging to the genus *Bacillus*, is described on the basis of phenotypic characterization, 16S rDNA sequence analysis and DNA–DNA hybridization studies. It is a Gram-positive, facultatively anaerobic, rod-shaped eubacterium that produces endospores. The spores of this novel bacterial species exhibited resistance to UV, γ -radiation, H₂O₂ and desiccation. The 16S rDNA sequence analysis revealed a clear affiliation between this strain and members of the low G+C *Firmicutes*. High 16S rDNA sequence similarity values were found with members of the genus *Bacillus* and this was supported by fatty acid profiles. The 16S rDNA sequence similarity between strain FO-92^T and *Bacillus benzoovorans* DSM 5391^T was very high. However, molecular characterizations employing small-subunit 16S rDNA sequences were at the limits of resolution for the differentiation of species in this genus, but DNA–DNA hybridization data support the proposal of FO-92^T as *Bacillus nealsonii* sp. nov. (type strain is FO-92^T=ATCC BAA-519^T=DSM 15077^T).

Abbreviations: FAME, fatty acid methyl ester; JPL-SAF, Jet Propulsion Laboratory Spacecraft Assembly Facility

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Application Number	10/759,327
Filing Date	1/17/2004
First Named Inventor	Venkateswaran
Art Unit	1645
Examiner Name	Lakia J. Tongue
Attorney Docket Number	CIT002

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	16	Satomi, M., Kimura, S., Mizoi, M., Sato, T. & Fujii, T. (1997) <i>Tetragenococcus murlaticus</i> sp. nov., a new moderately halophilic lactic acid bacterium isolated from fermented squid liver sauce. Int J Syst Bacteriol 47: 832-836.	
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		Filing Date	1/17/2004
		First Named Inventor	Venkateswaran
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**Tetragenococcus muriaticus sp. nov.,
a new moderately halophilic lactic
acid bacterium isolated from
fermented squid liver sauce
[published erratum appears in Int J
Syst Bacteriol 1998 Jan;48(1 Pt
1):332]**

M Satomi, B Kimura, M Mizoi, T Sato and T Fujii
Department of Food Science and Technology, Tokyo University of
Fisheries, Japan.

A total of 11 strains of moderately halophilic histamine-producing bacteria isolated from fermented squid liver sauce were studied phenotypically, genotypically, and phylogenetically. These strains are considered members of the genus *Tetragenococcus* based on their physiological, morphological, and chemotaxonomic characteristics. A 16S rRNA gene sequence analysis showed that these strains clustered with, but were separate from, *Tetragenococcus halophilus*. The results of DNA-DNA hybridization experiments indicated that the new isolates represent a new *Tetragenococcus* species, for which we propose the name *Tetragenococcus muriaticus*; strain X-1 (= JCM 10006) is the type strain of this species.

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		Filing Date	1/17/2004
		First Named Inventor	Venkateswaran
		Art Unit	1645
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Application Number	10/759,327
Filing Date	1/17/2004
First Named Inventor	Venkateswaran
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	22	Wayne, L., Brenner, D. J., Colwell, R. R., Grimont, P. A. D., Kandler, O., Krichevsky, M. I., Moore, L. H., Moore, W. E. C., Murray, R. G. E., Stackebrandt, E., Starr, M. P., & Truper, H. G. (1987) International Committee on Systematic Bacteriology. Report of the ad hoc committee on reconciliation of approaches to bacterial systematics. Int J Syst Bacteriol 37: 463-464.	
	23	Yoon, J.-H., Lee, K.-C., Waks, N., Kho, Y.-H., Kang, K. H. & Park, Y.-H. (2001) Sporosarcina aquimarina sp. nov., a bacterium isolated from seawater in Korea, and transfer of Bacillus globisporus (Larkin and Stokes 1967), Bacillus psychrophilus (Nakamura 1984) and Bacillus pasteurii (Chester 1898) to the genus Sporosarcina as Sporosarcina globispora comb. nov., Sporosarcina psychrophila comb. nov. and Sporosarcina pasteurii comb. nov., and emended description of the genus Sporosarcina. Int J Syst Evol Microbiol 51: 1079-1086.	
	24	GenBank; http://www.ncbi.nlm.nih.gov/	
	25	http://mars.jpl.nasa.gov/odyssey/	

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Sheet

1

of

3

Application Number

Completes If Known

10/759,327

Filing Date

1/17/2004

First Named Inventor

Venkateswaran

Art Unit

1645

Examiner Name

Lakia J. Tongue

Attorney Docket Number

CIT002

NON PATENT LITERATURE DOCUMENTS

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Complete if Known

Application Number	10/759,327
Filing Date	1/17/2004
First Named Inventor	Venkateswaran
Art Unit	1645
Examiner Name	Lakia J. Tongue
Attorney Docket Number	CIT002

Sheet 2 of 3

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	14	Ruger, H. J., Fritze, D., and Sproer, C. (2000) New psychrophilic and psychrotolerant <i>Bacillus marinus</i> strains from tropical and polar deep-sea sediments and emended description of the species. Int J Syst Evol Microbiol 50: 1305-1313.	
	15	Ruimy, R., Breilmayer, V., ElBaze, P., Lafay, B., Bousseman, O., Gauthier, M. and Christen, R. (1994) Phylogenic analysis and assessment of the genera <i>Vibrio</i> , <i>Photobacterium</i> , <i>Aeromonas</i> , and <i>Plesiomonas</i> deduced from small subunit rRNA sequences. Int J Syst Bacteriol 44: 418-426.	
	16	Satom, M., Kimura, B., Mizoi, M., Sato, T. & Fujii, T. (1997) <i>Tetragenococcus muraticus</i> sp. nov., a new moderately halophilic lactic acid bacterium isolated from fermented squid liver sauce. Int J Syst Bacteriol 47: 832-836.	
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	19	Swofford, D. (1990) PAUP: phylogenetic analysis using parsimony, version 3.0. Computer program distributed by the Illinois Natural History Survey, Champaign, IL.	
	20	Venkateswaran, K., Kempf, M., Chen, F., Satomi, M., Nicholson, W., & Kern, R. (2003) <i>Bacillus nealsonii</i> sp. nov., isolated from a spacecraft assembly facility, whose spores are gamma-radiation resistant. Int J Syst Evol Microbiol 53: 165-172.	

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STATEMENT BY APPLICANT**

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Sheet 2 of 3

Complete if Known

Application Number	10/759,327
Filing Date	1/17/2004
First Named Inventor	Venkateswaran
Art Unit	1645
Examiner Name	Lakia J. Tongue
Attorney Docket Number	CIT002

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Complete If Known	
Application Number	10/759,327
Filing Date	1/17/2004
First Named Inventor	Venkateswaran
Art Unit	1645
Examiner Name	Lakia J. Tongue
Attorney Docket Number	CIT002

Sheet 1 of 3

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Substitute for form 144B/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Application Number	10/759,327
		Filing Date	1/17/2004
		First Named Inventor	Venkateswaran
		Art Unit	1645
		Examiner Name	Lakia J. Tongue
Sheet 1 of 3	Attorney Docket Number	CIT002	

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Sheet

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of

3

Application Number

10/759,327

Filing Date

1/17/2004

First Named Inventor

Venkateswaran

Art Unit

1645

Examiner Name

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Attorney Docket Number

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Application Number	10/759,327
		Filing Date	1/17/2004
		First Named Inventor	Venkateswaran
		Art Unit	1645
		Examiner Name	Lakia J. Tongue
		Attorney Docket Number	CIT002
Sheet 1	of 3		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	1	Anonymous, (1980) NASA Standard Procedures for the Microbiological Examination of Space Hardware, NHB 5340.1B, 1980, Jet Propulsion Laboratory communication, National Aeronautics and Space Administration.	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet

1

of

3

Application Number

10/759,327

Filing Date

1/17/2004

First Named Inventor

Venkateswaran

Art Unit

1645

Examiner Name

Lakia J. Tongue

Attorney Docket Number

CIT002

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PTO/SB/088 (08-03)

Substitute for form 1449/PTO

Complete if Known

Application Number	10/759,327
Filing Date	1/17/2004
First Named Inventor	Venkateswaran
Art Unit	1645
Examiner Name	Lakia J. Tongue
Attorney Docket Number	CIT002

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 of 3

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Application Number	10/759,327
		Filing Date	1/17/2004
		First Named Inventor	Venkateswaran
		Art Unit	1645
		Examiner Name	Lakia J. Tongue
Sheet 2 of 3	Attorney Docket Number	CIT002	

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	11	Priest, F. G., Goodfellow, M. and Todd, C. (1988) A numerical classification of the genus <i>Bacillus</i> , J Gen Microbiol 234: 1847-1882.	
	12	Rhems, H., Fruhling, A., Schumann, P., Rohde, M. and Stackebrandt, E. (1999) <i>Bacillus silvestris</i> sp. nov., a new member of the genus <i>Bacillus</i> that contains lysine in its cell wall, Int J Syst Bacteriol 49: 795-802.	
	13	Reisenman, P.J. and Nicholson, W.L. (2000) Role of the spore coat layers in <i>Bacillus subtilis</i> spore resistance to hydrogen peroxide, artificial UV-C, UV-B, and solar UV radiation. Appl Environ Microbiol 66: 620-626.	
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	15	Rulmy, R., Breitmayer, V., ElBaze, P., Lafay, B., Boussemer, O., Gauthier, M. and Christen, R. (1994) Phylogenic analysis and assessment of the genera <i>Vibrio</i> , <i>Photobacterium</i> , <i>Aeromonas</i> , and <i>Plesiomonas</i> deduced from small subunit rRNA sequences. Int J Syst Bacteriol 44: 416-426.	
	16	Satomi, M., Kimura, B., Mizoi, M., Sato, T. & Fujii, T. (1997) <i>Tetragenococcus muraticus</i> sp. nov., a new moderately halophilic lactic acid bacterium isolated from fermented squid liver sauce. Int J Syst Bacteriol 47: 832-836.	
	17	Nakamura, L. K., Shida, O., Takagi, H., and K. Komagata, K. (2002) <i>Bacillus pycnus</i> sp. nov. and <i>Bacillus neidei</i> sp. nov., round-spored bacteria from soil. Int J Syst Bacteriol 52: 501-505	
	18	Schaeffer, P., Millet, J. & Aubert, J.-P. (1965) Catabolic repression of bacterial sporulation. Proc Natl Acad Sci 54: 704-711.	
	19	Swofford, D. (1990) PAUP: phylogenetic analysis using parsimony, version 3.0. Computer program distributed by the Illinois Natural History Survey, Champaign, IL.	
	20	Venkateswaran, K., Kempf, M., Chen, F., Satomi, M., Nicholson, W., & Kern, R. (2003) <i>Bacillus nealsonii</i> sp. nov., isolated from a spacecraft assembly facility, whose spores are gamma-radiation resistant. Int J Syst Evol Microbiol 53: 165-172.	

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